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Top Secret

[redacted]

DIRECTORATE OF
INTELLIGENCE

Industrial Facilities
(Non-Military)

Basic Imagery Interpretation Report

Burgas Petroleum Refinery Kameno

Burgas, Bulgaria

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Top Secret

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DATE MAY 1972
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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME			COUNTRY	
Burgas Petroleum Refinery Kameno			BU	
UTM COORDINATES	GEOGRAPHIC COORDINATES		COMIREX NO.	NIETB NO.
35TNH280105	42-33-15N 027-19-40E		None	

MAP REFERENCE

2nd RTS. USATC, Series 200, Sheet M0323-6HL, 3rd ed, Jul 69, Scale 1:200,000

(SECRET/ 25X1

LATEST IMAGERY USED	NEGATION DATE (If required)

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ABSTRACT

Burgas Petroleum Refinery Kameno is the largest refinery in Bulgaria. In addition to meeting most of Bulgaria's requirements for fuels, it produces many petrochemical products. The fuels products include high-octane gasoline, kerosene, probably jet fuel, and diesel and fuel oils which are possibly desulfurized. The major petrochemical products are polyethylene, polystyrene, toluene, probably ethylene glycol and synthetic rubber, and possibly phenol, acrylonitrile, and synthetic detergents.

Construction of the refinery began between September 1961 and April 1962, and construction activity has been observed on all coverages of the refinery through August 1971. The refinery appeared capable of operation in March 1964, but it was not seen operating until September 1964. It has been operating on all subsequent coverages except that of July 1965.

This report includes a line drawing, a photograph of the refinery, a listing of facilities with measurements of storage tanks, and a discussion of the status of facilities.

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FIGURE 1. LOCATION MAP.

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INTRODUCTION

Burgas Petroleum Refinery Kameno is the largest refinery in Bulgaria with respect to charge capacity. It supplies about two-thirds of Bulgaria's fuel requirements and also produces large quantities of petrochemicals. 1/ The refinery is located near the Black Sea, 6 nautical miles west-northwest of Burgas (see Figure 1).

Crude oil to charge the refinery reportedly originates in the Volga-Urals production region in the USSR. It is transported to the harbor at Burgas by tanker and then to the refinery by pipeline. 2,3/ A product pipeline is presently under construction from Burgas to Plovdiv. Electric power and steam are provided by the collocated Burgas Thermal Power Plant Refinery [redacted] 25X1

BASIC DESCRIPTION

The refinery occupies an area of about 1,600 acres, which measures approximately 13,300 by 4,200 feet (see Figures 2 and 3). Rail service to the refinery is provided by spurs from the rail line between Burgas and Sofia.

Operational Functions

The major products of the refinery are fuels and petrochemicals. The major units producing fuels are two and probably three crude oil distillation units, three catalytic reforming units (one of which is in a combination unit), and one hydrotreating unit. The products from these units include high-octane gasoline, kerosene, probably jet fuel, and diesel and fuel oils which are possibly desulfurized.

The fuel production units provide two sources of feedstock for the petrochemical units. The crude oil distillation units provide one feedstock, naphtha, which is cracked in an ethylene plant. The resultant gas stream is processed in a low-temperature gas separation unit and a gas separation (possible butadiene) unit. The catalytic reformers, the second feedstock source, provide product fractions which are separated in a possible aromatics extraction unit and a benzene-toluene-xylene unit. Collectively these operations produce the intermediate petrochemicals ethylene, propylene, butadiene, benzene, toluene, xylene, and probably ethylbenzene. These intermediates are feedstocks for a probable ethylene oxide unit, a probable ethylene glycol unit, one and possibly two polyethylene units, a possible styrene unit, one probable and one possible synthetic rubber plants, a polystyrene unit, a possible acrylonitric plant, a possible phenol unit, and a possible synthetic detergent plant. The petrochemical process unit identifications which are tentative are based on the availability of feedstocks, the need for intermediate products, the locations of units, and the types of equipment present.

In addition, the refinery contains a sulfur recovery unit, an unidentified secondary processing section in a combination unit, and an unidentified secondary processing unit under construction. Based on their unusual construction and the presence of associated equipment, some of the buildings in the administration and support area (Area 27) may be involved in research and development.

Construction and Operational Status

Construction of the refinery began between September 1961 and April 1962. The initial section of the refinery consisted primarily of fuel production units, most of which were complete by March 1964. Since that time construction has consisted primarily of petrochemical units. Since 1969 the rate of expansion appears to have decreased.

In 1966-67 the ethylene plant was expanded by about 50 percent. Three new furnaces and quench towers were added to the six previously present. On the latest coverage in August 1971 two additional furnaces were under construction. Other construction observed in progress in August 1971 consisted of an unidentified secondary processing unit in Area 23, two new storage areas, and expansion of the water treatment and storage facilities in Area 12. Ground scarring on the eastern side of the refinery indicated a possible new area of construction activity.

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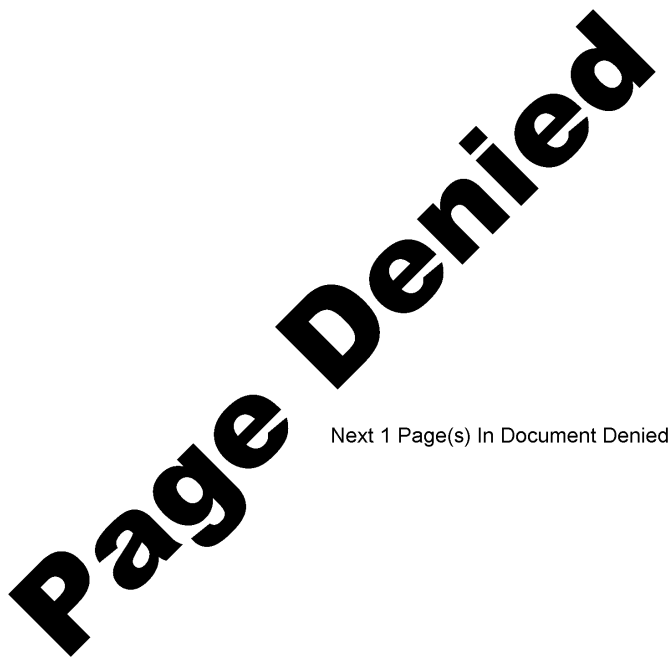

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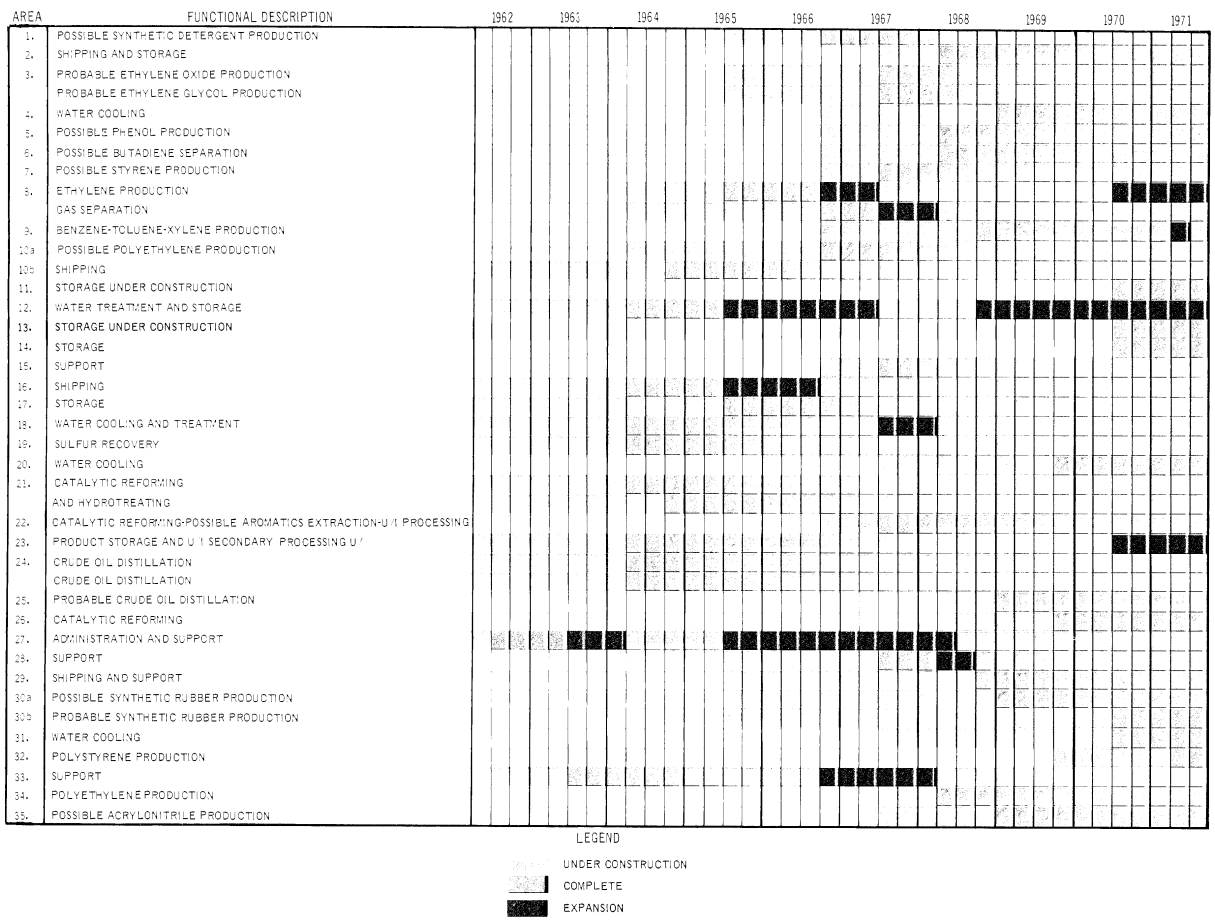

FIGURE 4. CONSTRUCTION CHRONOLOGY, BURGAS PETROLEUM REFINERY KAMENO, BURGAS, BULGARIA.

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The refinery reportedly began operating in September 1963. 4/ It did not appear to be operating on coverage of March 1964, but oil slicks on the water basins indicated that it may have been in operation previously. The refinery was first observed in operation on photography of September 1964 and it has been operating on all subsequent coverage except that of July 1965.

Figure 4 shows the construction chronology of the individual areas and major units through August 1971.

Facilities and Equipment

Table 1 lists the functional areas, facilities, and equipment within the refinery. Measurements are given to the nearest half-meter.

Table 1. Equipment and Facilities at the Burgas Petroleum Refinery Kameno (Keyed to Figure 3)

Area	Functional Description	Equipment and Facilities
1	Possible Synthetic Detergent Production	1 Unit with 2 blocks of processing equipment 2 processing buildings 2 pump buildings 1 shipping building 2 support buildings 7 storage/treating tanks (not measured) 35 cylindrical storage tanks 2 [redacted] 25X1 16 3-meter-diameter 17 [redacted] 25X1
2	Shipping and Storage	1 Pump building 1 Shipping building 1 Support building 1 Guard tower 9 Cylindrical storage tanks 4 [redacted] 25X1 5 9-meter-diameter
3	Probable Ethylene Oxide and Ethylene Glycol Production	1 Probable ethylene oxide unit with 6 columns 1 bank of cooling coils/accumulators/horizontal tanks 1 processing building with attached bank of processing equipment 4 intermediate storage tanks (not measured) 1 Probable ethylene glycol unit with 12 columns 5 horizontal processing tanks 8 cylindrical processing tanks 3 processing buildings (1 with an attached bank of processing equipment)

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Area	Functional Description	Equipment and Facilities
3 (Cont)		1 Processing building 1 Pump building 1 Shipping building 1 Support building 1 Loading rack 15 Cylindrical storage tanks 6 [redacted] 25X1 2 9-meter-diameter 4 6-meter-diameter 3 3-meter-diameter 5 Horizontal storage tanks 3 12-meter-long 2 [redacted] 25X1
4	Water Cooling	1 Pump building 8 Natural-draft cooling towers
5	Possible Phenol Production	1 Unit with 1 processing building with 4 attached reactor-type vessels and 1 attached bank of processing equipment containing at least 6 columns 1 pump building 2 support buildings 3 Support buildings 4 Cylindrical storage tanks 1 [redacted] 25X1 1 9-meter-diameter 1 [redacted] 25X1 1 7 Horizontal storage tanks 3 18-meter-long 2 15-meter-long 2 12-meter-long
6	Possible Butadiene Separation	1 Unit with 7 columns 1 bank of processing equipment 1 processing building 1 pump building 1 air cooler 1 Pump building 5 Horizontal storage tanks, 15 meters long
7	Possible Styrene Production	1 Unit with 3 columns 1 bank of processing equipment 2 small furnaces 1 processing building with a bank of horizontal tanks on the roof 1 processing building with a bank of heat exchangers/cooling coils/accumulators on the roof 2 pump buildings 1 support building 1 Support building 4 Cylindrical storage tanks 3 18-meter-diameter 1 6-meter-diameter

25X1

Area	Functional Description	Equipment and Facilities
8	Ethylene Production and Gas Separation	1 Ethylene production unit with 9 quench towers 4 columns 3 banks of cooling coils/ heat exchangers/accumulators 1 air cooler 3 banks of processing equipment 11 furnaces 6 processing buildings 1 support building 1 Gas separation unit with 13 columns 1 bank of processing equipment 2 processing buildings 1 compressor/processing building 1 support building
9	Benzene-Toluene-Xylene Production	1 Unit with 16 columns 2 banks of processing equipment 10 solvent storage tanks 3 furnaces 1 processing building 8 other buildings 15 Cylindrical storage tanks 2 18-meter-diameter 2 9-meter-diameter 3 [redacted] 25X1 4 6-meter-diameter 4 [redacted] 25X1
10	Possible Polyethylene Production and Shipping (A) Possible Polyethlene Production	1 Unit with 10 columns 5 banks of processing equipment 24 cylindrical processing tanks 6 horizontal processing tanks 7 processing buildings 4 pump/compressor buildings 2 cylindrical storage tanks, [redacted] 25X1 2 horizontal storage tanks, 15 meters long 2 gasholders 1 15-meter-diameter 1 9-meter-diameter
	(B) Shipping	6 Shipping buildings 2 Pump buildings 4 Support buildings 8 Cylindrical storage tanks 2 [redacted] 25X1 6 6-meter-diameter 6 Horizontal storage tanks 4 15-meter-long 2 [redacted] 25X1
11	Storage Under Construction	2 Pump buildings 3 Support buildings 8 Cylindrical storage tanks, 36 meters in diameter (5 are under construction) 1 Water basin

25X1

Area	Functional Description	Equipment and Facilities
12	Water Treatment and Storage	4 Small columns 8 Horizontal separators/treating tanks (4 with circular basins) 5 Water treatment buildings 6 Pump buildings 24 Support buildings 3 Cylindrical storage tanks 1 9-meter-diameter 2 6-meter-diameter 36 Water treatment/storage basins
13	Storage Under Construction	4 Cylindrical storage tanks under construction, 48 meters in diameter
14	Storage	2 Pump buildings 12 Cylindrical storage tanks 2 36-meter-diameter 2 27-meter-diameter 5 18-meter-diameter 3 15-meter-diameter
15	Support	1 Pump building 17 Support buildings 1 Cylindrical storage tank, 6 meters in diameter
16	Shipping	4 Pump buildings 5 Support buildings 7 Cylindrical storage/blending tanks 4 12-meter-diameter 3 [redacted] 25X1 3 Horizontal storage tanks 2 15-meter-long 1 12-meter-long 6 Loading racks 4 for rail cars 2 for trucks
17	Storage	1 Pump building 36 Semiburied cylindrical storage tanks
18	Water Cooling and Treatment	1 Water treatment building 1 Pump building 15 Cooling towers 10 induced draft 5 natural draft 2 Semiburied cylindrical storage tanks 6 Water treatment basins 1 Flare tower
19	Sulfur Recovery	1 Unit with 5 banks of processing equipment 4 horizontal processing tanks 2 processing/pump buildings 1 air cooler 1 Support building 15 Horizontal storage tanks, 15 meters long 1 Gasholder, [redacted] diameter 25X1

25X1

Area	Functional Description	Equipment and Facilities
20	Water Cooling	1 Pump building 9 Natural-draft cooling towers 5 Cylindrical storage tanks, 15 meters in diameter
21	Catalytic Reforming and Hydrotreating	1 Catalytic reforming unit with 4 reactors 9 columns 1 bank of processing equipment 2 banks of heat exchangers/ cooling coils 3 furnaces 1 processing building 2 pump buildings 2 possible precipitator buildings 1 Hydrotreating unit with 2 probable reactors 3 columns 2 horizontal processing tanks 2 banks of heat exchangers/ cooling coils 2 furnaces 1 processing/pump building 1 Pump building 12 Cylindrical storage tanks, 6 meters in diameter 4 Horizontal tanks, [redacted] long 25X1
22	Catalytic Reforming-Possible Aromatics Extraction-Unidentified Secondary Processing	1 Combination unit with 1 reforming section with 4 reactors 2 columns 4 horizontal processing tanks 1 possible aromatic extraction section with 12 columns 1 bank of heat exchangers/ cooling coils/accumulators 4 horizontal processing tanks 2 possible solvent storage tanks 1 unidentified secondary processing section with 5 columns 2 banks of processing equipment 4 furnaces 2 pump buildings 4 cylindrical storage tanks, 15 meters in diameter 3 horizontal storage tanks, 18 meters long

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Area	Functional Description	Equipment and Facilities
23	Product Storage and Unidentified Secondary Processing Under Construction	2 Pump buildings 2 Support buildings 27 Cylindrical storage tanks 7 9-meter-diameter 4 [redacted] 25X1 12 6-meter-diameter 2 [redacted] 25X1 2 3-meter-diameter 16 Horizontal storage tanks 8 15-meter-long 4 12-meter-long 4 6-meter-long 2 Gasholders 1 27-meter-diameter 1 15-meter-diameter 1 Unidentified secondary processing unit under construction
24	Crude Oil Distillation	2 Units, each with 6 columns (1 has 2 additional columns) 1 bank of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 2 furnaces 1 pump building 1 desalting section with 1 desalting sphere 2 desalting drums 2 treating towers 1 treating building with 3 attached accumulators/ settling tanks 1 horizontal tank (not measured) 1 support building 16 Cylindrical storage tanks, [redacted] 25X1
25	Probable Crude Oil Distillation	1 Unit with 6 columns 1 bank of processing equipment 2 banks of heat exchangers/ cooling coils/accumulators 7 horizontal processing tanks (3 are possibly for desalting) 3 furnaces 2 pump buildings 1 support building 3 Support buildings 13 Cylindrical storage tanks 10 15-meter-diameter 3 [redacted] 25X1

Area	Functional Description	Equipment and Facilities
26	Catalytic Reforming	1 Unit with 4 reactors 9 columns 3 banks of processing equipment 9 horizontal processing tanks 2 furnaces 2 processing buildings 2 pump buildings 1 support building 18 Cylindrical storage tanks, 9 meters in diameter
27	Administration and Support	6 Administration buildings 8 Possible laboratory and research buildings 5 Vehicle sheds 1 Pump building 1 Guard tower 6 Support buildings 1 Building under construction
28	Support	2 Possible repair buildings 2 Support buildings
29	Shipping and Support	4 Pump buildings 5 Shipping buildings 14 Support buildings 3 Loading racks 41 Cylindrical tanks 20 6-meter-diameter 5 [redacted] 25X1 16 3-meter-diameter 29 Horizontal storage tanks 16 15-meter-long 2 9-meter-long 11 [redacted] 25X1
30	Probable Synthetic Rubber Production (A) Possible Synthetic Rubber Production	1 Unit with 11 columns 5 banks of processing equipment 4 horizontal processing tanks 2 furnaces 10 processing buildings (1 with horizontal tanks on the roof) 5 other buildings 3 cylindrical storage tanks, 6 meters in diameter 6 vertical pressure tanks (not measured)
	(B) Probable Synthetic Rubber Production	1 Unit with 29 columns 2 banks of processing equipment 7 horizontal processing tanks 4 processing buildings 1 other building
31	Water Cooling	1 Pump building 11 Natural-draft cooling towers

25X1

Area	Functional Description	Equipment and Facilities
32	Polystyrene Production	1 Unit with 1 bank of reactors 1 group of storage silos 1 blending/extrusion building 1 processing building 1 probable acid storage area with 1 building 5 cylindrical tanks 4 horizontal tanks 4 Support buildings 7 Horizontal storage tanks, 21 meters long
33	Support	10 Short columns 1 Horizontal tank (not measured) 5 Buildings 2 Gasholders 1 15-meter-diameter 1 9-meter-diameter
34	Polyethylene Production	1 Unit with 6 columns 4 processing buildings (1 with 9 silos) 4 support buildings 2 cylindrical tanks (not measured)
35	Possible Acrylonitrile Production	1 Possible acrylonitrile production unit with 2 reactor-type vessels 1 possible reactor 6 columns 3 banks of processing equipment 2 horizontal processing tanks 5 processing/pump buildings 14 cylindrical storage tanks (not measured) 1 Large possible fiber production building 1 Processing building 1 Substation with 1 building and a transformer yard 10 Cylindrical storage tanks 2 15-meter-diameter 2 9-meter-diameter 2 [redacted] 25X1 3 6-meter-diameter 1 [redacted] 25X1 12 Horizontal storage tanks 6 18-meter-long 6 not measured

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Map

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Requirement

COMIREX NO6
Support Number 422808

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